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## PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

## Wax Compositions

We, ROHM & HAAS COMPANY, a corporation organized under the laws of the State of Delaware, United States of America, of 222 West Washington Square, Philadelphia 5, Pennsylvania, United States of America, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention is concerned with wax compositions and a method for making them.

In accordance with this invention, there is provided a substantially anhydrous composition comprising a wax, an essentially linear addition polymer in the form of discrete particles have a size of not over 10 microns and a hydrophobic polymeric dispersing agent as herein defined for the linear polymer.

One embodiment of the invention comprises a composition as above defined and which contains a hydrocarbon liquid in which the wax is soluble and in which the linear addition polymer is dispersed, 90 to 100% by weight of the dispersed polymer being in the form of discrete particles have a size of not over 10 microns, the polymeric dispersing agent having in its molecule at least two distinct components, each of polymeric size, including a first component which has a preferential affinity for the hydrocarbon liquid and a second component which has a preferential affinity for the dispersed linear polymer.

By hydrophobic polymeric dispersing agent for the purpose of this specification, we mean one which has in its molecule at least two distinct components each of polymeric size; the first distinct component of the polymeric dispersant is a component which exhibits a stronger affinity for the liquid hydrocarbon

medium than for the dispersed polymer in that such component is preferentially soluble in, or miscible with, the hydrocarbon medium at least to that degree which would result in the formation of a colloidal solution thereof; such first component may or may not be incompatible with the dispersed polymer; the second component of the polymeric dispersant molecule is one which is grafted on to the first component and which exhibits a stronger affinity for the dispersed polymer than for the hydrocarbon medium in that it is preferentially soluble in, or miscible with, the dispersed polymer; this second component of the dispersant may or may not be incompatible with the hydrocarbon medium.

The second component of the dispersant may be introduced into the polymeric dispersant molecule by a grafting procedure wherein there is used a monomer which is of the same chemical constitution as, or of sufficiently similar chemical constitution to that of the monomer or monomers employed in the formation of the dispersed polymer so that the portion of the dispersant molecule derived therefrom is compatible or miscible with the dispersed polymer. Suitable grafting monomers are those which, if polymerized alone, would result in a polymer having a stronger affinity for the dispersed linear polymer than for the liquid hydrocarbon medium.

The formation of the dispersant may be effected *in situ* simultaneously with the main polymerization used to form the dispersed polymer. Alternatively, the dispersant may be formed by a separate preliminary graft polymerization system: The terms "graft" and "grafting" used herein in connection with the polymer, are not intended to indicate that the polymer chains grafted onto the first

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component are necessarily present as branches on the primary or trunk chain of the first component, but should be interpreted in accordance with the definition of a graft copolymers at J. Polyme Sci. Vol VIII No 3 page 260.

For fuller details of liquid hydrocarbon dispersions of the general character described above, and their method of preparation, reference may be made to our French Patent No. 1,238,512 and our co-pending U.K. Application No. 31243/61 (Serial No 992635).

The hydrocarbon liquids that may be employed in making the hydrocarbon-dispersed system may be a simple compound or a mixture of compounds. Thus, the hydrocarbon may be of aliphatic or cycloaliphatic character, e.g. naphthenic, or aromatic, or the medium may be made up of a mixture of these various types of hydrocarbons. Examples of individual hydrocarbons that may be employed include propane, cyclopropane, butane, pentane, n-hexane, cyclohexane, n-heptane, n-octane, iso-octane, benzene, toluene, and xylene (o-, m-, or p-xylene). Commercially-available hydrocarbon mixtures may be employed such as mineral spirits, gasoline, xylene mixtures, terpenes, solvent naphthas of aromatic, aliphatic, or naphthenic character, alkyl benzenes in which the alkyl group or groups have from 1 to 4 carbon atoms, octane fractions which contain a mixture of octane isomers, and so on. Generally, it is preferred to employ a hydrocarbon liquid medium comprising at least 50% by weight of non-aromatic components, and especially those of aliphatic or paraffinic make-up. This preference has the advantage of lower cost and capacity to disperse a wide variety of polymers in the form of discrete particles.

The dispersed polymer may be formed by emulsion polymerisation in the hydrocarbon medium from polymerizable and copolymerizable ethylenically unsaturated monomers which preferably are monoethylenically unsaturated and which preferably have a single group of the formula  $H_2C=C<$ , such monomers being polymerized to form addition polymers of linear type in the hydrocarbon medium which also contains a hydrophobic dispersing agent of the character described. The dispersing agent may be formed *in situ* in the polymerization medium or it may be formed before it is introduced into the polymerization medium in which the main polymer is to be prepared.

Thus, the emulsion polymer dispersed in the hydrocarbon liquid medium may be formed by the emulsion polymerization of any one of a wide variety of ethylenically unsaturated monomers such as vinylidene chloride and the vinyl esters of fatty acids having from 1 to 18 carbon atoms, including

vinyl laurate vinyl oleate, and vinyl stearate. Esters of acrylic acid or of methacrylic acid with hydroxy compounds, particularly alkanols, having from 1 to 18 carbon atoms may likewise be employed. Examples include methyl acrylate or methacrylate, ethyl acrylate or methacrylate, the various butyl acrylates or methacrylates, cyclohexyl acrylate or methacrylate, benzyl acrylate or methacrylate, phenyl acrylate or methacrylate, n-hexyl, n-octyl, t-octyl, dodecyl, hexadecyl, or octadecyl acrylates or methacrylates. Acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, styrene,  $\alpha$ -methyl styrene, vinyltoluenes, acrylic acid, acrylic acid anhydride, methacrylic acid, methacrylic anhydride, fumaric acid, crotonic acid, allyl acetate, glycidyl methacrylate, t-butylaminoethyl methacrylate, hydroxyalkyl acrylates or methacrylates such as  $\beta$ -hydroxyethyl methacrylate,  $\beta$ -hydroxyethyl vinyl ether,  $\beta$ -hydroxyethyl vinyl sulfide, N-vinyl-2-pyrrolidone, N,N-dimethylaminoethyl methacrylate, ethylene, vinyl chloride, vinyl fluoride, vinylidene fluoride, hexafluoropropylene, chlorotrifluoroethylene, and tetrafluoroethylene may also be used as the monomers for making the main polymer.

The first distinct component of the polymeric dispersing agent, i.e. the precursor component having a preferential affinity for the hydrocarbon medium, may be composed of natural and synthetic rubbers, hydrocarbon-soluble acrylic polymers, various modified or oxidizing vegetable oils, and other hydrocarbon polymers, examples of which are described as follows:

Besides natural rubber, which may be in the form of raw crepe rubber or milled crepe rubber, pale or dark, reclaimed rubber (either of natural or synthetic types), cyclized, or milled-cyclized rubber may be employed. Among the synthetic rubbers that may be employed as precursors for forming the polymeric dispersing agents are polyisobutylene, polyisoprene, polychloroprene, copolymers of isoprene and isobutylene, particularly those containing from 1 to 25% of isoprene, and copolymers of chloroprene and isobutylene; chlorinated butyl rubbers, that is, chlorinated polymers of isoprene, isobutylene, or copolymers thereof, polymers of butadiene, including the liquid polybutadienes as well as the solid types, copolymers of butadiene with acrylonitrile and of butadiene and styrene, including GRS rubber. In general, there may be employed as the precursors any of the so-called butadiene polymers such as are prepared by polymerizing diolefins, halogen-substituted or other substituted diolefins, or by copolymerizing diolefins with other copolymerizable monoethylenically unsaturated compounds containing vinyl or vinylidene groups such as acrylonitrile, acrylates and methacrylates (e.g. methyl, ethyl, or butyl acrylates or methacrylates), styrene, halogen-substituted

- styrenes (e.g. mono- or di-chloro-styrenes or mono- or di-bromo-styrenes), or alkyl styrenes such as methyl styrenes or dimethylstyrenes. More particularly, the butalastic polymers may be obtained by polymerizing a conjugated diolefin such as butadiene, isoprene, dimethylbutadiene, and chloroprene, or by copolymerizing butadiene and styrene, butadiene and vinyltoluene, butadiene and acrylonitrile, butadiene and isobutylene, or isoprene and isobutylene. Generally, butalastic polymers are defined by Marchionna [Marchionna, "Butalastic Polymers", (Rheinhold 1946)] as synthetic, elastic polymers of a butadiene compound with or without other compounds polymerizable therewith.
- Among the synthetic linear polymers of acrylic type that may be employed as the precursors are the oil-soluble types of polymeric esters of acrylic acid or methacrylic acid such as copolymers of esters of methacrylic acid or acrylic acid formed with alcohols having 4 to 18 carbon atoms or of mixtures of such esters with esters of methacrylic acid or acrylic acid formed with alcohols having 1 to 5 carbon atoms, wherein sufficient hydrocarbon groups of at least four carbon atoms are present to impart solubility to the precursor in the solvent medium used in the polymerization system. Mixtures of methacrylate and acrylate esters can be used in the production of the solvent-soluble precursors. Such polymeric precursors may also include in the copolymer molecule substantial proportions from 1% to as much as 99% by weight of units derived from other monoethenically unsaturated monomers such as maleic anhydride, acrylic acid, methacrylic acid, N-vinyl-2-pyrrolidone, N,N-dimethylaminoethyl acrylate or methacrylate, N,N-dimethylaminoethyl acrylamide or methacrylamide, dimethylaminoethyl vinyl ether, dimethylaminoethyl vinyl sulfide, ureidoalkyl vinyl ether or sulfide such as ureidoethyl vinyl ether or sulfide, vinyl chloride, vinylidene chloride, vinyl acetate, vinyl propionate, vinyl laurate, vinyl stearate, vinyl oleate, ethylene, isobutylene, acrylamide, methacrylamide, acrylonitrile, methacrylonitrile, vinyl ethyl ether and vinyl isobutyl ether.
- Other precursors of oil-soluble types are the oil-soluble polymers of vinyl esters of higher aliphatic acids having from 8 to 18 or more carbon atoms, such as vinyl octanoate, vinyl laurate, and vinyl stearate, and vinyl ethers of alkanols having 2 to 18 carbon atoms, such as vinyl ethyl ether, vinyl isobutyl ether, and vinyl octyl ether. Oil-soluble copolymers of these vinyl esters and vinyl ethers may also be used.
- As the precursor for the polymeric dispersing agent, oxidized vegetable oils such as blown linseed oil, blown castor oil, and the like may be employed.
- Polymers of terpenes such as the polymers obtained by the acid catalysis (the Friedel-Crafts type of catalyst) of  $\beta$ -pinene or terpene mixtures containing it may be employed.
- In general, the molecular weight of the dispersing agent may be of a wide range, but, preferably, it is from one tenth to ten times that of the main polymer.
- After formation of a polymer dispersion in a hydrocarbon liquid as described in detail above and in the cited references, a wax is then dissolved in the hydrocarbon liquid component of the dispersion. Thereafter, if desired, some or all of the hydrocarbon liquid medium may be removed by evaporation.
- The wax may be introduced into the polymer dispersion in an amount from about one-half to 90% by weight, based on the dispersed linear addition polymer of the system. Natural or artificial waxes an either mineral or vegetable waxes may be employed. Chemically the waxes may be of the nature of a hydrocarbon, halogenated hydrocarbon, ester, ether, amide or ketone. Examples of the hydrocarbon waxes include polyethylenes and long-chain paraffins such as those having an average of about 10 to 30 carbon atoms in the chain. Chlorinated, brominated, or fluorinated paraffins, aromatics, or naphthenics having molecular weights of at least 800 to about 2500 or higher may be used. Chlorinated diphenyl, chlorinated naphthalene, and chlorinated methane containing about 1 to 75%, and preferably 40 to 70% by weight of chlorine, are examples which may be used. Polymeric esters such as polymers of vinyl esters of long-chain aliphatic acids such as from 8 to 18 carbon atoms or of vinyl ethers with long-chain alcohols having from 8 to 18 carbon atoms may be employed. Natural waxes such as beeswax, montan wax, carnauba wax, and Japan wax may be employed.
- The fact that a wide variety of waxes can be added, without causing coagulation, to the non-aqueous dispersions in hydrocarbon liquid is somewhat surprising since such dispersions are frequently coagulated by the addition of chemically related compounds of lower molecular size or weight. For example, the non-aqueous dispersions of acrylic polymers are coagulated when ethylene dichloride, 1,4-dichlorobutane, dichloropentanes, or dichlorohexanes are added, but the addition of the chlorinated hydrocarbons of higher molecular weight in the waxy range give valuable compositions without encountering coagulation difficulties.
- If desired, a small proportion up to 10% by weight, based on the weight of the dispersed polymer, of a polymer soluble in the hydrocarbon liquid may be included. Such polymer is preferably such that it has a  $T_g$  value (second order transition temperature) of at least 25° C. up to about 100° C. and has the advantage of increasing the gloss, aiding

in coalescence, and, if acid groups are incorporated within the polymer molecule, aiding removability by alkaline cleaners such as ammonia. Low molecular weight, readily-soluble polymers may be incorporated to facilitate cleaning action by subsequently applied polish. The use of such a low molecular weight, readily-soluble polymer renders the coating of polish readily removable by the same medium by which it is initially applied.

If paste-type or solid composition containing a high percentage of wax are desired, a part or all of the solvent may be removed. The compositions may be clear or they may be pigmented or dyed to provide transparent or translucent to opaque colored coatings. Usually, a content of  $\frac{1}{4}$  to 1% of a dye is adequate for any coloration desired. The amount of pigment may be varied widely such as from  $\frac{1}{2}$ % to 150% of the weight of other non-volatile ingredients, depending on the effect desired.

The wax/polymer compositions are of utility for the coating or polishing of solid surfaces; particularly wood, synthetic resinous and metal surfaces, such as the surfaces of furniture, floors and automobiles. The compositions containing hydrocarbon liquid may also be used for sizing cellulosic fibers.

The following experiments are presented to illustrate the preparation of various polymer dispersions to which wax may then be added in accordance with the invention. In these experiments and in the actual examples of the invention presented later, parts and percentages are by weight unless otherwise indicated.

#### EXPERIMENT A.

(a) A solution of 100 parts of a rubbery isobutylene/isoprene copolymer (Enjay 035 Butyl Rubber) and 1.2 parts of lauroyl peroxide in 900 parts of mineral spirits boiling in the range of 310° to 394° F. was heated to 100° C. while air was bubbled through the solution until the viscosity of the rubber solution had dropped from 373 centipoises to one centipoise.

(b) Three hundred and thirty parts of the above oxidized butyl rubber solution, 303 parts of the same mineral spirits, and 0.5 parts of lauroyl peroxide were mixed, de-aerated with nitrogen, and heated to 100° C. for one hour. The temperature was lowered to 90° C. and a mixture of 141.8 parts of methyl methacrylate, 141.8 parts of ethyl acrylate, and 0.4 parts of benzoyl peroxide was added over the course of two hours. A mixture of 141.8 parts of ethyl acrylate, 141.8 parts of methyl methacrylate, 0.4 parts of benzoyl peroxide, and 275 parts of aliphatic hydrocarbon solvent naphtha boiling in the range of 244° to 291° F. was added over the course of two hours. A solution of 1.2 parts of lauroyl peroxide in 25 parts of the same solvent naphtha was then added

over the course of three hours. The polymer dispersion was concentrated to 58.1% solids by removing the naphtha and residual monomer by distillation under reduced pressure. The resulting dispersion was stable and had a viscosity (Brookfield) of 480 centipoises.

#### EXPERIMENT B.

An 11.2% solution of pale crepe rubber was prepared in mineral spirits. Forty grams of this solution was mixed with 111 grams of mineral spirits and 0.1 gram of lauroyl peroxide was added to the mixture in a suitable reaction vessel. The atmosphere in the vessel was swept with nitrogen and the reaction mixture was heated to 89° C. with agitation for one hour to introduce active sites into the rubber. It was then cooled to 30° C. Then 0.2 gram of benzoyl peroxide was dissolved in a mixture of 33 grams of methyl methacrylate, 65 grams of ethyl acrylate, and two grams of maleic anhydride, and the resulting mixture was added all at once to the first mixture. The mixture obtained thereby was heated at 87° C. After the elapse of about one hour and seven minutes, a definite cloudiness, showing the formation of polymer, became evident. The heating of the mixture was continued at about 87° to 93° C. for another hour and twenty minutes, whereupon an additional 0.2 gram of lauroyl peroxide dissolved in two grams of mineral spirits was added. After continued heating at 90° to 102° C. for three hours, another addition of two tenths of a gram of lauroyl peroxide in two grams of mineral spirits was made and heating was continued at 90° to 100° C. for another hour and twenty-five minutes, at which time another addition of 0.2 grams of lauroyl peroxide in two grams of mineral spirits was made and heating was continued at 87° to 102° C. for another five hours and five minutes. During all of the heating, the atmosphere in the vessel was swept with nitrogen and the reaction mixture was continuously agitated. The product amounted to a total of 251.3 grams of a polymer dispersion having 37.3% solids in which there was effected a 92.4% conversion of the monomer into the polymer. The dispersion was homogeneous to all appearance, having a slightly yellowish, milky appearance.

#### EXPERIMENT C.

Ten parts of a copolymer of about 10% of N-vinyl-2-pyrrolidone, about 30% of butyl acrylate, about 35% of lauryl methacrylate, and about 25% of stearyl methacrylate in fifteen parts of toluene and 0.2 part of benzoyl peroxide were added to 185 parts of a commercial octane. The mixture was stirred and heated to 95° to 107° C. for forty-five minutes. A mixture of forty-five parts of methyl methacrylate and forty-five parts of ethyl acrylate was added and the

mixture was refluxed for two hours. A stable polymeric dispersion resulted. It contained about 30% solids consisting essentially of 87% of a main copolymer of methyl methacrylate and ethyl acrylate (about 50:50 weight ratio) dispersed as undissolved particles having a range of sizes from about 0.2 to 1.8 microns and about 13% of a dissolved polymeric dispersing agent form of a graft of methyl methacrylate and ethyl acrylate in approximately equal amounts on the N-vinylpyrrolidone copolymer.

#### EXPERIMENT D.

Four parts of butadiene-styrene (70%/30%) copolymer and 0.1 part of benzoyl peroxide were dissolved in seventy-five parts of toluene and heated to 107° C. for forty-five minutes. A mixture of 22.5 parts of ethyl acrylate and 22.5 parts of methacrylic acid was then added, and the resulting solution was stirred and heated at 107° C. for five hours. A low viscosity polymer dispersion was formed.

The following examples describe the preparation of illustrative wax/copolymer compositions according to the invention.

#### EXAMPLE 1.

One part of carnauba wax was added to 9 parts of a 1/1 ethyl acrylate/methyl methacrylate copolymer dispersion in mineral spirits (50.5% solids) prepared according to Experiment A. The mixture was heated to dissolve the carnauba wax. Upon cooling, a paste-type material was obtained which was applied as a furniture polish. A glossy, protective coating was obtained upon light buffing.

#### EXAMPLE 2.

One part of carbauba wax was added to 9 parts of the copolymer dispersion employed in Example 1. An additional 9.5 parts of mineral thinner and 0.5 part of dimethyl polysiloxane (General Electric SF-96 (100) silicone fluid) were added to improve water-repellency. The mixture was heated, with stirring, to dissolve the carnauba wax. Upon cooling, a fluid liquid was obtained which was applied as a polish on steel. A glossy, protective coating was obtained upon light buffing.

#### EXAMPLE 3.

Five parts of a 20% solution of paraffin wax in mineral spirits were added to 8 parts of a 50.5% dispersion of a 1/1 ethyl acrylate/methyl methacrylate copolymer in mineral spirits, the dispersion having been prepared according to Experiment A. The resulting low viscosity liquid was applied as a polish on wood. Although a hazy film was obtained, it developed gloss upon light buffing. The resulting coating was readily redispersed and removed by mineral thinner.

#### EXAMPLE 4.

One part of a 20% solution of paraffin wax in mineral spirits was added to 19.5 parts of a 50.5% dispersion of a 1/1 ethyl acrylate/methyl methacrylate copolymer in mineral spirits and prepared as in Experiment A. The resulting liquid dispersion was applied as a coating to unpainted white pine. An excellent clear finish was obtained.

#### EXAMPLE 5.

One part of a lightly-oxidized hydrocarbon wax was dissolved, with heating, in 18 parts of a 1/1 ethyl acrylate/methyl methacrylate copolymer dispersion (50% solids) in mineral spirits and prepared as in Experiment A. The resulting thick liquid dispersion was coated on a sheet of polystyrene. Upon drying, a clear film was obtained.

#### EXAMPLE 6.

Ten parts of the dispersion prepared according to the procedure of Experiment B were mixed with 3.7 parts of paraffin wax. The mixture was stirred and heated to dissolve the wax. The mineral spirits was removed by distillation. The resulting waxy product exhibited greater toughness than unmodified paraffin wax.

#### EXAMPLE 7.

Two parts of a chlorinated paraffin (scale wax) containing 70% chlorine and having an average molecular weight of about 1200 were added to 16 parts of a 1/1 ethyl acrylate/methyl methacrylate copolymer dispersion in mineral spirits (50% solids) prepared according to the procedure of Experiment A. The mixture was heated to dissolve the wax. Upon cooling, a fluid dispersion was obtained which gave clear, glossy, hard films upon evaporation of the mineral spirits.

#### EXAMPLE 8.

Five parts of a chlorinated paraffin (scale wax) containing 40% chlorine and having an average molecular weight of about 700 were mixed with ten parts of a 1/1 ethyl acrylate/methyl methacrylate copolymer dispersion in mineral spirits (50% solids) prepared according to Experiment A. A fluid dispersion was obtained which gave clear, glossy, flexible films upon evaporation of the mineral spirits.

#### EXAMPLE 9.

One hundred grams of rutile titanium dioxide were dispersed in a mixture of 66 grams of a chlorinated paraffin (scale wax) containing 70% chlorine and having an average molecular weight of about 1200, 33 grams of a chlorinated paraffin (scale wax) containing 50% chlorine and having an average molecular weight of about 900, and 100 grams of mineral spirits. Six hundred grams of a 1/1 ethyl acrylate/methyl methacrylate co-

polymer dispersion in mineral spirits (50% polymer solids and prepared as in Experiment A) were mixed with 10% (on polymer weight) of sucrose acetate isobutyrate and the resulting mixture were added slowly with stirring to the pigment dispersion. The resulting mixture gave glossy, tough, adherent films on steel upon evaporation of the mineral spirits.

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## EXAMPLE 10.

Two parts of a waxy polyethylene (mol. weight about 2000) were added to 20 parts of an acrylonitrile/maleic anhydride/butyl acrylate (60/3/27 weight ratio) copolymer dispersion (obtained as in Example 2 of the cited French patent) after dilution of the dispersion with xylene to a concentration of 60% non-volatile content. The composition was applied to a Cellophane previously coated with a cationic melamine-formaldehyde resin baked on at 120° C. for a period of ten minutes. The coated product was thereby rendered resistant to moisture.

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## EXAMPLE 11.

Three parts of a copolymer of 10 parts of vinyl acetate and 90 parts of vinyl stearate were added to 16 parts of the 31% (non-volatile content) acrylonitrile/2-ethylhexyl acrylate (54/36) copolymer dispersion obtained as in Example 3 of the cited French patent. The composition was applied to a "Cellophane" (Registered Trade Mark) previously coated with a cationic melamine-formaldehyde resin baked at 120° C. for a period of ten minutes. The coated product was thereby rendered resistant to moisture.

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## EXAMPLE 12.

Two parts of beeswax were added to six parts of the 52% (non-volatile) poly(vinyl acetate) dispersion obtained as in Example 4 of the cited French patent. When applied to leather and dried, a water-repellent, buffable polish was obtained.

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## EXAMPLE 13.

Two parts of Japan wax were added to 9 parts of the copolymer dispersion of Experiment C. When applied to leather and dried, a water-repellent, buffable polish was obtained.

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## EXAMPLE 14.

Two parts of butyl stearate were mixed with three parts of the 39.5% (non-volatile) ethyl acrylate/methacrylic acid (1:1) copolymer dispersion of Experiment D. Cellulose yarns were warpsized by passage through the resulting composition at room temperature after dilution with toluene to 15% non-volatile concentration. The size was readily removable on washing in a warm aqueous alkaline solution (0.5% Na<sub>2</sub>CO<sub>3</sub>).

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## EXAMPLE 15.

Three parts of montan wax were mixed with 100 parts of a 7.5% (non-volatile) maleic anhydride/vinyltoluene (20/25) copolymer dispersion obtained as in Example 14 of the cited French patent. Cellulose acetate yarns were sized by impregnation with this composition at room temperature followed by drying at 60° C. After the weaving of a fabric from the sized yarns, the sizing was readily removed in an alkaline scouring operation at 90—100° C.

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## EXAMPLE 16.

Three parts of chlorinated diphenyl containing 55% chlorine were added to 25 parts of a 21% (non-volatile) tricresyl phosphate-containing poly(vinyl chloride) dispersion obtained as in Example 25 of the cited French patent. The composition was stripped of solvent to a content of 95% non-volatiles and then applied to shoes as a buffable polish.

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## EXAMPLE 17.

Two parts of N,N-dibutyl stearamide were added to 50 parts of a 38.5% (non-volatile) methyl methacrylate/ethyl acrylate/methacrylamide (50/40/10) copolymer dispersion prepared as in Example 8 of the cited pending application. The composition was stripped of solvent to a content of 95% non-volatiles and then applied to shoes as a buffable polish.

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## EXAMPLE 18.

Two parts of chlorinated diphenyl containing chlorinated naphthalene containing 60% chlorine were added to 30 parts of the 38.2% (non-volatile) ethyl acrylate/methyl methacrylate/vinyltoluene/methacrylic acid (49.7/24.9/24.9/0.5) copolymer dispersion prepared as in Example 6 of the said pending application. This composition was applied to glass, cold-rolled steel, and aluminium panels and dried at 65° C. to form clear, bright coatings thereon.

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## EXAMPLE 19.

Two parts of chlorinated diphenyl containing 37% chloride were added to a non-aqueous dispersion in mineral spirits obtained by the procedure of Example 6 of said pending application but using a mixture of monomers containing 29% vinylidene chloride, 68% ethyl acrylate, and 3% of itaconic acid, the dispersion having a 35% non-volatile concentration. The mixture was applied to a cotton fabric and dried at 80° C. A water-repellant fabric was thereby obtained.

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Reference is directed, by virtue of Section 9 Subsection (1) of the Patents Act 1949, to Patent No. 893,429.

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## WHAT WE CLAIM IS:—

1. A substantially anhydrous composition comprising a wax, an essentially linear addition polymer in the form of discrete particles

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